UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,447	03/18/2005	Vincent Marion	4590-384	4276

33308 7590 04/10/2008

LOWE HAUPTMAN & BERNER, LLP
1700 DIAGONAL ROAD, SUITE 300
ALEXANDRIA, VA 22314

EXAMINER	
ALLISON, ANDRAE S	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
04/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,447	MARION, VINCENT	
	Examiner	Art Unit	
	Andrae S. Allison	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *March 18, 2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

.DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the original image" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation "the first component" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claims 2-4 and 6-7 are rejected as incorporating the deficiencies of the claim upon which respective claim depends.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cucchiara et al (NPL document titled: Detecting Moving Objects, Ghosts and Shadows in Video Streams) in view of Cuccuhiara et al (NPL document tiled: Improving Shadow Suppressing in Moving Object Detection with HSV Color Information).

As to independent claim 1, Cucchiara discloses a method of color image processing (method for using color information and shadow detection for object segmentation, see abstract), comprising the following steps: converting a color image into an intermediate image having components that depend solely on H and S components of the original image in an HSV or HLS representation (note that the processing is done on the HSV color space, see page 1339, section 3, [p][001], lines 10-14); the intermediate image having two components X and Y, determined by functions especially of the H component, these functions taking the same value when the H component is zero or equal to one; generating a new image having only one component from the intermediate image, the component of this new image being a function of the components of the intermediate image (note that only the saturation component is used for shadow detection, see page 1339, section 3, [p][002], lines 1-8). However, Cucchiara does not specifically teach the intermediate image having two components X and Y, determined by functions especially of the H component, these functions taking the same value when the H component is zero or equal to one. Cucchiara discloses a method for improved shadow suppression (see title) where the intermediate image having two components X and Y, determined by functions especially of the H component, these functions taking the same value when the H component is zero or equal to one (see page 336, section III, [p][005], lines 4-12). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modified method for using color

information and shadow detection for object segmentation of Cucchiara with the method for improved shadow suppression of Cucchiara to distinquish between moving shadows and moving objects points by using the HSV color space which corresponds closely to the human perception of color and has proven more accurate in distinguishing shadows that RGB (see page 336, section III, [p][002-003]).

As to claim 2, Cucchiara teaches the method of color image processing, wherein the components X and Y are determined by functions not only of the H component, but also of the S component, these functions tending towards zero when the S component tends towards zero (see Equation 9).

As to claim 3, Cucchiara teaches the method of color image processing, wherein the functions of the component S are monotonic and continuous functions (see page 336, section III, [p][006], lines 1-6).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cucchiara et al (NPL document titled: Detecting Moving Objects, Ghosts and Shadows in Video Streams) in view of Cuccuhiara et al (NPL document tiled: Improving Shadow Suppressing in Moving Object Detection with HSV Color Information) further in view of Carevic et al (NPL document titled: Region-Based Coding of Color Images Using Karhunen–Loeve Transform).

As to claim 4, Cucchiara does not expressly disclose the method of color image

processing, wherein the new image is generated in keeping only the first component of the Karhunen-Loeve transformation or a linear approximation of this transformation. Carevic discloses a for region-based coding of color images wherein the new image is generated in keeping only the first component of the Karhunen-Loeve transformation or a linear approximation of this transformation (see page 27, section I, [p][005], lines 1-7). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have added the region based coding method of Carevic to the method for shadow detection for object segmentation of Cucchiara as modified by the method for improved shadow suppression of Cucchiara because the Karhunen-Loeve transformation optimally decorrelates image data thus providing a set of orthogonal basis vector which determine the major types of color gradients over each segment (see page 27, section I, [p][004-005]).

6. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cucchiara et al (NPL document titled: Detecting Moving Objects, Ghosts and Shadows in Video Streams) in view of Cuccuhiara et al (NPL document tiled: Improving Shadow Suppressing in Moving Object Detection with HSV Color Information) further in view of Scanlan et al (NPL document titled: A Shadow Detection And Removal Algorithm For 2-D Images).

As to claim 6, Cucchiara does not expressly disclose the method of color image processing, wherein a filtering is performed on the darkest and the lightest pixels, which represent a determined fraction of the total number of pixels of the image. Scanlan discloses a shadow detection algorithm wherein a filtering is performed on the darkest and the lightest pixels, which represent a determined fraction of the total number of pixels of the image (see page

2058, [p][004], lines 5-15). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modified method for using color information and shadow detection for object segmentation of Cucchiara as modified by Cucchiara with the shadow detection algorithm of Scanlan to remove shadows from images where the pattern set occupying the upper most intensity range of the image while preserving any remaining texture left behind (see abstract).

As to claim 7, note the discussion above, Scanlan teaches the method of color image processing, wherein the dynamic range of the new image is adjusted to the total available dynamic range (see page 2058, [p][004], lines 5-15).

Allowable Subject Matter

7. Claim 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made part of the record and not relied upon is considered pertinent to applicant's disclosure.

Yamazoe et al (US Patent No.: 7,158,671) is cited to teach a an image processing apparatus and method.

Tanaka (US Patent No.: 6,140,997) is cited to teach a color feature extracting.

Wallach et al (US Patent No.: 7,133,069) is cited to teach a system and method to increase effective dynamic range of image sensors.

Kiyokawa (US Patent No.: 6,163,321) is cited to teach an image processing apparatus and method.

Payton (US Patent No.: 7,194,128) is cited to teach a method for compressing and reconstructing a color image.

Herodotou et al, (NPL document titled: "**A COLOR SEGMENTATION SCHEME FOR OBJECT-BASED VIDEO CODING**") is cited to a color segmentation scheme for use in a an object-based video coding.

Inquires

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrae S. Allison whose telephone number is (571) 270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Meta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrae Allison

March 7, 2008

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

A.A.